

**COMMUNICATION SYSTEM ARCHITECTURE  
AND OPERATING METHODOLOGY  
PROVIDING A VIRTUAL NEIGHBOURHOOD NETWORK**

5    Abstract of the Disclosure

A communication system (10) supports the provision of a plurality of dedicated communication resources (50-64), such as copper drops, RF links and optical fibres, to dedicated home-gateway devices (44-48) or distribution points (124). The communication resources (50-64) support broadband interconnection (104)  
10    between the dedicated home-gateway devices (44-48) or distribution points (124) and an access multiplexor (30) in a network (12). Each gateway device (44-48) or distribution point (124) generally includes a local RF transceiver (84) and associated control logic (80-82) that allows local communication (86) between gateway devices (44-48) and hence statistically multiplexed access (60-64, 89) to  
15    multiple communication resources, thereby providing increased bandwidth in uplink and/or downlink directions. With the control logic (80) operable to provide a routing and prioritisation/arbitration function, each gateway (44-48) is able to selectively engage use of supplemental, non-reserved communication resources usually associated with a dedicated one-to-one connection between the access network  
20    (12) and at least one secondary gateway. Physical layer access to information routed via a secondary gateway within a virtual neighbourhood network (90-92) comprising several gateways is restricted through an end-to-end encryption algorithm between an originating gateway and, at least, the access multiplexor (30).